ATTACHMENT L

RECLAMATION BOND ESTIMATE

Surety Estimate
for the
Tony M Mine
Garfield County, Utah

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RECLAMATION COST ESTIMATE
TONY M MINE

1.0 INTRODUCTION

This reclamation cost estimate is based on a conservative scenario in which the mine is developed to the full extent of the Phase 1 Mine Plan with no concurrent reclamation included. It is assumed that salvageable items of value such as the generators, air compressors, and mobile equipment have been removed from the site. It is assumed that the cost to remove these items will be more than off-set by their salvage value. The estimate is based on unit costs presented in the 2005 RSMeans Environmental Remediation Cost Data – Unit Price handbook published by Reed Construction Data, Inc. (RCD) (RCD 2005a), the 2006 RSMeans Heavy Construction Cost Data handbook (RCD 2005b), the 2006 Means Site Work and Landscape Cost Data handbook (RCD 2006c), and the reclamation plan requirements detailed in the Notice of Intent/Plan of Operations (NOI/PO) for the project. This approach is consistent with guidance provided by the Utah Division of Oil, Gas and Mining (DOGM).

Unit prices from the RSMeans handbooks are summarized in Appendix A. These prices include the contractor's overhead and profit; therefore, these items are not included as separate line items in the estimate. Each unit price is referenced to both the section and page number where it can be found in the specified handbook. The unit prices from the 2005 environmental handbook (RSMeans 2005a) were increased by four percent to account for one year of inflation. The unit prices have not been adjusted for location because all of the Utah cities referenced in the handbooks are either slightly above or below average for the country.

RSMeans prices have been adjusted to account for site-specific conditions in those cases where the assumptions used to develop the RSMeans prices were significantly different than those proposed in the NOI/PO. Production factors from the Caterpillar Performance Handbook, Ed. 29 (Caterpillar 1998) were used to adjust earthwork production rates for bulk grading. The hours for performing other miscellaneous tasks such as welding, trenching, salvaging riprap, and pocking of steep areas were estimated based on past experience. These hours were then multiplied by the RSMeans unit prices for labor and equipment. All assumptions and estimates are clearly identified in this estimate. Project specific price quotes for those items that could not be found in the RSMeans Handbook (e.g., prices for native seed mixes) are also included and their source referenced.

The cost estimate and Appendix A are divided into the following seven closure and reclamation categories.

I. Structures and Foundations: Consists of the demolition of buildings and other structures ~~(e.g., ore slots)~~ and disposal of the debris **within the underground workings of the mine** ~~at an off-site landfill~~. Inert solid waste such as concrete pads and foundations, concrete blocks, bricks, and glass will be broken up and either buried in the immediate area or disposed of in the underground workings.

II. Infrastructure: Includes the abandonment of the well and septic systems, fence removal, and the removal and disposal of petroleum storage tanks, water storage tanks, and the sand trap.

III. Mine Openings: All portals and vent holes will be permanently sealed and covered.

IV. General Earthwork: Consists of grading to achieve stable and free draining slopes, ripping of compacted areas, and placement of salvaged topsoil. With the exception of requested slope variances, all slopes will be regraded to achieve slope angles of 3H:1V or less steep.

V. Seeding: Includes disking and seeding of the more level areas (i.e., slopes flatter than 3H:1V) using a tractor, dozer, or equivalent machinery equipped with a disk and broadcast spreader. Steeper areas (i.e., slopes of 2H:1V to 3H:1V) will be pocked using a track-mounted backhoe or hydraulic excavator and broadcast seeded by hand. Pocking consists of creating vegetative microbasins by digging a bucket load of soil at an 18-inch depth and depositing the soil two to three feet above the newly created basin. The process is repeated in a random and overlapping pattern to eliminate downhill conduits for surface water runoff.

VI. Mobilization/Demobilization: Costs for mobilizing and demobilizing equipment from the nearest major population centers are included.

VII. Supervision, Construction Facilities, and Monitoring: A full-time superintendent, ¾-ton pickup truck, portable generator, and portable toilets are included in this category.

The assumptions and methods used to develop the cost estimate are described below in Sections 2 through 8, respectively, for each of the seven reclamation categories listed above. A detailed list of the acres of disturbance is presented in Table 1. Cost estimates for each of the seven closure and reclamation categories are presented in Tables 2 through 8 and summarized in Table 9. The tables utilize the unit prices from Appendix A, the disturbed areas presented in Table 1, information from the NOI/PO, and volume calculations. Most of the volume calculations (e.g., topsoil volumes, backfill volumes) are incorporated into the tables; however, the volume calculations for regrading the waste rock area and evaporation pond are more complex and are presented separately in Appendix B.

2.0 STRUCTURES AND FOUNDATIONS

Estimated costs for demolishing the project's structures, disposing of the building materials **within the underground workings of the mine** ~~at the local landfill~~, and breaking up and burying the concrete foundations and pads are presented in Table 2.

2.1 Buildings and Structures

Building demolition costs are based on the unit prices presented in Part I.A of Appendix A and the in-place, intact volume of the structures to be demolished. Demolition debris will consist of metal siding, particle and gypsum board, carpet, lumber, office furniture, bathroom fixtures, tile, insulation, and similar materials. The vent hole diffusers and casing removed during reclamation will also be disposed of **in the underground workings** ~~at the landfill~~. Disposal costs are based on the disposal quantity being approximately one-third of the intact, in-place volume with an average density of 300 pounds per cubic yard. **Permitting costs for on-site disposal have not been included as part of this estimate.** ~~Dump fees are shown in Part I.B of Appendix A. The Ticaboo landfill is located approximately 10 to 15 miles from the Tony M Mine.~~

2.2 Concrete Pads and Foundations

Concrete pads and foundations **from the buildings** will be broken up into five-foot-diameter sections or smaller and either buried nearby at a depth of at least three feet or hauled into and disposed of within the mine workings. Under Utah regulations, the concrete with incidental rebar or wire mesh meets the definition of inert waste and does not require disposal in a permitted landfill. Concrete pads for the buildings are assumed to be 4 and 6-inches thick with wire mesh reinforcement. The concrete pad and sidewalls for the ore slots **will be left in place and buried beneath the reclaimed waste rock area** ~~are assumed to be equal to be 12-inches thick with heavy reinforcing (e.g., rebar)~~. Unit prices for breaking concrete and disposing of it onsite are listed in Part I.C and D of Appendix A. ~~The sloped bottom of the ore bin is assumed to be made of 1-inch thick steel plate that will be need to be cut and then used to seal the vent holes and/or hauled offsite for salvage. Unit prices for cutting the steel are provided in Part I.E of Appendix A.~~

3.0 INFRASTRUCTURE

Table 3 presents the estimated costs for removing mine infrastructure including abandonment of the well and septic system and removal of fencing, oil and fuel storage tanks, the water tank, and the sand trap. Buried utility lines (power, water, septic, and communication lines) will be left in place.

3.1 Well Abandonment

Well abandonment costs include pulling the pump and water pipe from the well and grouting the well (see Part II.A and B in Appendix A) in accordance with State requirements. Removal and disposal of the well house is included in Section 2 above. Septic system abandonment will include abandoning two manholes and filling the septic tank (estimated to be 25,000 gallons) with fine-grained, sandy mine waste followed by a cap of concrete. Unit prices for septic system abandonment are presented in Part II.C, D, and E of Appendix A.

3.2 Fence Removal

Fence removal includes a chain link fence around Storage Yard 1 and three-strand barbed wire fence around the septic system and evaporation pond. Unit prices for fencing demolition are presented in Part II.F of Appendix A.

3.3 Storage Tank and Sand Trap Removal

Storage tank removal includes the removal and disposal of one 5,000-gallon diesel tank from the generator area, one 500-gallon gasoline tank and one 5,000-gallon diesel tank from the fueling station, four 65 to 100-gallon oil storage tanks from the maintenance shop, and one 5,000-gallon water tank located at Vent Hole 4. The RSMeans removal and disposal costs (see Part II.G and H, respectively, of Appendix A) are based on a 100-mile round trip, which is consistent with disposal/recycling at Hanksville, Utah. The sand trap removal is based on RSMeans removal cost of an oil interceptor (sand trap) with up to 100 gpm capacity.

4.0 MINE OPENINGS

Table 4 provides estimated costs for sealing and covering the vent holes and portals. The cost estimate includes the sealing and closure of **eight** ~~seven~~ vent holes (existing Vent Holes 1, 3, 4, 5, and 6 and proposed Vent Holes 7, ~~and~~ 8**, and 9**) and five portals (main portals, secondary portal, south adit, and north adit).

4.1 Vent Holes

The first step in reclaiming the vent holes will consist of digging down four to six feet deep around each hole and cutting the casing off from three to four feet below the ground surface. The RSMeans unit prices for trenching assume that the excavator is set-up and working in one location, which is not consistent with site conditions where the vent holes are an average of ¾-mile apart. It was assumed that an 80-horsepower tracked hydraulic excavator would require about 15 minutes at 3 to 4 miles per hour (mph) to tram between locations and that the trench around each casing could be excavated in 45 minutes. Based on this scenario, 7 hours were allotted toward excavating around the ~~7~~ **8** vent holes plus an additional 1 hour for traveling from the portal area to the initial excavation.

Vent holes will be reclaimed by backfilling with loose fill material obtained from the existing mine dump. The backfill material will be covered by 3 to 4 feet of the soil stockpiled during construction of the vent hole. Stockpiled top soil will be placed over the backfilled material. All disturbed areas will be ripped and seeded in the late fall. The estimate assumes for each vent hole that 10 hours will be required to load the fill material into trucks, 30 hours will be required to haul and dump the fill material near or into the vent hole and 4 hours will be required to clean up the area. ~~After the casing is cut off, a steel plate will be welded over the opening and structural steel (i.e., small I-beams and rebar) will be welded over the top of the steel plate to form a six-inch-thick, reinforced square cover. Concrete will be poured between the I-beams and around the rebar to complete the installation. A minimum of three feet of soil will be placed over the cover. The estimate assumes that a welder and laborer can cut the casing and weld together a cover in six hours and that two laborers can hand-mix and pour the concrete for each cover in four hours.~~ Materials are based on average cover dimensions of six feet by six feet. Unit costs for sealing the vent holes are presented in Part III.A through G of Appendix A.

4.2 Mine Portals

The portals will be sealed by backfilling the initial 30 feet of each entrance with waste rock or other readily available backfill material. The backfill will also be extended out from two feet above the top of each portal in front and to either side of each portal at a 3H:1V slope to create a natural appearing talus slope. Backfilling was estimated using a small 80 horsepower (hp) dozer (equivalent to a Caterpillar D-4). Entry dimensions of 8 feet high by 12 feet are assumed for all openings. The portals will be filled with 225 CY of material from the waste rock area. Unit costs for sealing the portals are presented in Part III.H of Appendix A.

5.0 GENERAL EARTHWORK

For the purposes of this estimate, earthwork is divided into bulk grading/excavation, rough grading and ripping (gentle slopes), rough grading and pocking (steeper slopes), topsoil hauling and placement, and installation of riprap and sediment control measures. Table 5 presents the calculations for each category.

5.1 Bulk Grading and Excavation

Bulk grading/excavation includes regrading the waste rock area's 1.5H:1V angle-of-repose slopes to an average slope of 4H:1V. The evaporation pond dam will also be breached with the material from the breach being placed on the dam's downstream benches and in the immediate upstream pond area. The breached area will be recontoured to achieve slopes of 2H:1V, similar to the

current breached configuration. Contaminated sediment, as defined in 110.4 of the Notice of Intention to Commence Large Mining Operations, will be removed and placed in the underground mine workings.

The estimate assumes that the majority of the bulk grading and excavation work will be done using a 300 hp dozer (equivalent to a Caterpillar D-8). Earthwork volumes and average push distances for both the waste rock area and dam breach are presented in Appendix B. Unit costs are based on type of material, average push distances and a grade adjustment, as shown in Part IV.A of Appendix A. Almost all of the bulk pushing will be downhill and the unit price was reduced by 33% ((1-(1/1.5)) to reflect an average downhill grade of 4H:1V or -25%. The adjustment was based on the "% Grade vs. Dozing Factor" graph presented on page 1-53 of the Caterpillar Performance Handbook, Ed. 29.

A portion of the clay material removed in breaching the dam will be placed upstream of the dam so as to create a 1 to 2% surface grade through the breach area. Approximately 2,000 cy of this material will be placed using 14-cy scrapers (equivalent to a Caterpillar 621F), as the efficient push distance for a dozer is generally limited to about 300 feet. The haul distance for the scrapers will range from 300 to 700 feet with an average of about 450 feet. This distance is significantly shorter than the closest available RSMeans unit price for scrapers (i.e., 1,500 feet). The unit price was reduced by 28%(1-(310 bcy/430 bcy)) to reflect the shorter haul distance based on the Graph "Distance vs. Production" for a flat haul and 2% rolling resistance on page 8-63 of the Caterpillar Performance Handbook, Ed. 29.

Contaminated evaporation pond sediment will be removed using 14-cy scrapers. The volume of contaminated sediment is based on the assumption of an average of 6 inches of contamination throughout the water covered area of the pond (elevation 4876 feet and lower). Contaminated sediment will be pushed into Vent Holes 1 and 3. Approximately 500 cy of sediment may be placed in each the vent hole shafts. The remaining sediment will be distributed in the mine working from the bottom of the vent holes. Unit costs for bulk grading and excavation are presented in Part IV.B of Appendix A.

5.2 Grading and Ripping

The majority of the disturbed area will consist of flat to gently sloping slopes of 15 degrees (3.73H:1V) or less. These areas include the waste rock area, storage yards, pad and stockpile areas, parking and building areas, roads, temporary drainage ditches, the waterline corridor, the evaporation pond, and the upstream and downstream dam slopes. These areas will be graded and ripped. Grading will produce a free draining surface that blends with the surrounding topography. Ripping will loosen the upper 18-inches of soil so that it can more readily support vegetative growth. Ripping will typically be done after topsoil placement and will follow the contour on sloped areas.

Unit costs for grading and ripping are presented in Part IV.C of Appendix A and are based on using a 200 hp dozer (equivalent to a Caterpillar D-6) with rippers. This choice of equipment is more applicable to projects such as golf courses or parks, rather than mined-land reclamation. For this project, it is assumed that a 300 hp dozer is used with the same unit prices as a 200 hp dozer (i.e., the higher unit price of the bigger dozer is balanced by its higher productivity).

5.3 Topsoil Placement

Topsoil will be placed over the top of all disturbed areas except the evaporation pond/dam area, waterline corridor, and the small access roads and pads leading to the vent holes and the north and south adits. The existing soils in these non-topsoiled areas will be used as the growth media for revegetation as described in the NOI/PO. Table 5 shows the acres, loose topsoil depth, and required loose topsoil volume for each area that will receive topsoil. Two methods of topsoil placement are assumed in the cost estimate. For those disturbed areas that are located close to a proposed topsoil stockpile (i.e., up to about 300 feet), spreading of the topsoil using a dozer is assumed. Topsoil placement using self-propelled scrapers is assumed for those locations located further from topsoil stockpiles (i.e., an average of about ¼-mile roundtrip). Unit costs for topsoil placement are presented in Part IV.D and E of Appendix A.

5.4 Grading and Pocking

The steeper areas of the site with slopes greater than 15 degrees (3.73H:1V) include the 2H:1V slopes within the dam breach, the 2H:1V slopes within the waterline corridor, and the 3H:1V slopes against the backfilled portals. These areas will be pocked using a track-mounted backhoe or hydraulic excavator. Pocking, as described earlier, consists of creating vegetative microbasins with the equipment's bucket. For cost estimating purposes, the unit price for an 80-hp hydraulic excavator (equivalent to a Caterpillar 312B) and operator is assumed. The RSMeans handbooks do not provide production rates for pocking; accordingly, the time required to rough grade and pock each area was estimated based on experience using this type of equipment. Estimated times for rough grading and pocking included 5 days for the 2,819-foot-long water corridor, 2 days for the dam breach, and one day for the portals. Unit costs for grading and pocking are presented in Part IV.F of Appendix A.

5.5 Installation of Riprap and Sediment Controls

Riprap will need to be installed in the bottom of the breach area of the dam. This riprap will come from the upstream face of the dam and will be installed in a similar manner to the current configuration. For cost estimating purposes, it is assumed that a 300-hp dozer can push the required rock of the dam face and into a pile in 4 hours and that a front-end loader with a 2.5 to 3 cy bucket can scoop up the rock and place it in the breach in 8 hours. No other riprap is required because the permanent drainage channel will be installed during mine operations and the temporary drainage channel will be backfilled and reclaimed. Unit costs for riprap installation are presented in Part IV.G and H of Appendix A.

Earthen berms will need to be installed on the steeper slopes and in areas where surface runoff is more concentrated to minimize erosion until vegetation can be reestablished. Installation of 1,000 feet of 2-foot-high earthen berm has been included in the estimate. Unit costs for earthen berm installation are presented in Part IV.I of Appendix A.

6.0 REVEGETATION

Revegetation will consist of broadcast seeding of all disturbed areas using the approved native seed mixes. Four seed mixes have been developed for the various portions of the site (i.e., Greasewood, Blackbrush, Salt Desert Shrub, and Evaporation Pond areas). Soil material from the waste rock area **and the existing stockpiles** will also be inoculated with mycorrhizal fungi;

however, no additional revegetation practices such as fertilization or mulching will be employed. Table 6 presents the estimated cost for seeding and soil inoculation.

6.1 Seeding

The flatter areas with slopes less than 15 degrees (3.73H:1V) will be seeded and disked using a 135 hp scraper or equivalent equipped with a three ripper setup. Areas with slopes greater than 15 degrees will be broadcast seeded and raked by hand. Appendix A, Part V identifies unit costs per acre for both methods and unit prices per acre for the four seed mixes. Table 6 presents the estimated seeding cost based on seeding method and type of seed used.

6.2 Mycorrhizal Fungi Inoculation

The top six inches of revegetation waste rock from the reclaimed waste rock area will be stripped prior to reopening and expending the waste rock area. During reclamation, this soil will be placed back over the waste rock area. This soil **and any soil from the existing stockpiles** will be treated with 60 pounds per acre of mycorrhizal fungi to improve vegetative results. The mycorrhizal fungi will be broadcast in dry form over the waste rock area prior to ripping (see Section 5.2 above) so that it is incorporated into the root zone. An 80-hp dozer (or equivalent) equipped with a broadcast spreader will be used to broadcast the fungi. Appendix A, Part V presents the unit prices used to calculate the inoculation costs listed in Table 6.

7.0 MOBILIZATION/DEMOBILIZATION

Site reclamation can be accomplished using a relatively small crew and common earthmoving equipment. A contractor would most likely mobilize out of one the larger towns in south central Utah. For estimating purposes, the average mileage from Ticaboo, Utah to Hanksville, Blanding, Price, Green River, and Moab, Utah was used to calculate mobilization and demobilization costs.

An average roundtrip mobilization/demobilization mileage of 125 miles was calculated as shown in Part VI.A of Appendix A.

The equipment needed to complete the reclamation and the tasks assigned to each piece of equipment are listed below. The estimated costs to mobilize and demobilize the equipment are presented in Part VI.A and B of Appendix A. Table 7 provides a summary of projected mobilization/demobilization costs for the project.

a. 300 hp Dozer – Bulk grading and excavating, grading, ripping, and topsoil placement
b. 80 hp Dozer – Backfill portals
c. 15 cy Self-Propelled Scraper – Excavate and haul fill and topsoil, fine grading and seeding
d. 80 hp Hydraulic Excavator – Demolition, infrastructure, seal vent holes, grading and pocking
e. 125 hp Front-end Loader – Demolition, abandon infrastructure, load topsoil
f. 12-cy (16 ton) Dump Trucks (2 units) – Demolition, haul topsoil
g. Truck-Mounted Welder – Seal vent holes
h. Drill Rig or Drill Support Truck – Abandon water well
i. Pick-up Truck, 4WD, ¾-ton (2 units) – All tasks

8.0 SUPERVISION, CONSTRUCTION FACILITIES, AND MONITORING

The project is expected to take approximately four weeks to complete followed by three years of site monitoring, when reclamation is anticipated to be complete. The estimate includes one full-

time field superintendent for this period plus a ¾-ton, four-wheel-drive pickup for his use. A portable generator is included for operating electrically-powered tools and small portable equipment. Two portable bathrooms are also included for the crew. The monitoring costs include labor for one person to conduct semi-annual on-site reviews and report progress for three years following reclamation construction activities. The unit costs for these items are provided in Part VII. A through D of Appendix A. The estimated cost for the four-week period of reclamation construction activities and three years of monitoring is shown in Table 8.

9.0 COST ESTIMATE SUMMARY

Table 9 provides a summary of the estimated closure and reclamation costs by category. The contractor's overhead and profit have been included in the unit prices used for each category; accordingly, they are not listed as separate line items. The total estimated cost of $**703,146** ~~613,738~~ is equivalent to a cost of approximately $**13,590** ~~12,840~~ per acre for the **51.75** ~~47.8~~ acres of disturbed area that will be reclaimed. This total estimated cost includes a 10 percent contingency and is escalated for 5 years with a 3.2 percent inflation rate. The estimate is considered to be conservative, as no allowance has been made for salvage values and the hourly operator and labor rates incorporated into the RSMeans handbooks are generally higher than those paid by small to medium-sized construction companies in south central Utah.

REFERENCES

Caterpillar Inc. 1998. Caterpillar Performance Handbook, Ed. 29, Peoria, Illinois.

Granite Seed Company 2006. Mycorrhizal fungi inoculation quote. Lehi, Utah.

Reed Construction Data (RCD), Inc.. 2005a. "2005 RSMeans Environmental Remediation Cost Data – Unit Price, 11th Annual Edition".

Reed Construction Data (RCD), Inc. 2005b. "2006 RSMeans Heavy Construction Cost Data, 20th Annual Edition".

Reed Construction Data (RCD), Inc. 2005c. "2006 RSMeans Site Work and Landscape Cost Data, 25th Annual Edition."

Maple Leaf Company 2006. Native seed mix quotes. Ephraim, Utah.

TABLE 1
PROPOSED SURFACE DISTURBANCE

Description (a)	Previously Disturbed (b) (acres)	Previously Undisturbed (b) (acres)
Portals, Adits, and Ventholes		
Main Portal Area	0.72	0.00
South Adit Pad (40 x 85)	0.08	0.00
North Adit Pad (20 x 35)	0.02	0.00
VH-1 Pad (30 x 94)	0.06	0.00
VH-3 Pad (21 x 88)	0.04	0.00
VH-4 Pad (62 x 86)	0.12	0.00
VH-5 Pad (32 x 100)	0.07	0.00
VH-6 Pad (48 x 101)	0.11	0.00
VH-7 Pad (50 x 90)	0.00	0.10
VH-8 Pad (50 x 90)	0.00	0.10
VH-9 Pad (50 x 90)	**0.00**	**0.10**
Subtotal	**1.23**	~~**0.21**~~ **0.31**
Waste Rock Area (WRA) Subtotal	**7.63**	**0.00**
Roads (c)		
Portal Access Road (40 x 357)	0.33	0.00
South Adit Road (16 x 672)	0.25	0.00
North Adit Road (16 x 664)	0.24	0.00
VH-1 Access Road (16 x 589)	0.22	0.00
VH-3 Access Road (16 x 551)	0.19	0.00
VH-5 Access Road (16 x 293)	0.11	0.00
VH-6 Access Road (16 x 297)	0.11	0.00
VH-7 Access Road (16 x 168)	0.00	0.06
VH-8 Access Road (16 x 964)	0.00	0.35
VH-9 Access Road (16 x 18)	**0.00**	**0.01**
Evaporation Pond East Road (16 x 779)	0.29	0.00
Subtotal	**1.73**	**0.42**
Dewatering System		
Evaporation Dam and Pond	22.22	0.00
Waterline Corridor (20 x 2,819) = total disturbed area	1.30	0.00
Subtotal	**23.52**	**0.00**
Diversion Channels & Sedimentation Ponds (d)		
WRA Diversion Channel (permanent)	1.50	0.00
County Road Channel (temporary)	0.47	0.00
County Road Sediment Basin (temporary)	~~0.08~~ **0.21**	0.00
Subtotal	~~**2.05**~~ **2.17**	**0.00**

TABLE 1 (continued)
PROPOSED SURFACE DISTURBANCE

Structures and Buildings		
Shop/Warehouse	~~0.06~~ 0.36	0.00
Mine Office/Dry	~~0.08~~ 0.27	0.00
Parking Lot	~~0.45~~ 0.47	0.00
Leach Field	~~0.24~~ 0.28	0.00
~~Building Area Common Areas (e)~~	~~1.73~~	~~0.00~~
Subtotal	~~2.55~~ 1.38	**0.00**
Yards and Storage Areas		
Storage Yard ~~1~~ (Laydown Area)	~~1.96~~ 0.17	0.00
~~Storage Yard 2~~	~~0.90~~	~~0.00~~
Fueling Station	0.07	0.00
Generator Area	0.06	0.00
Subtotal	~~2.86~~ 0.30	**0.00**
Stockpile Areas		
OS-~~1~~ Ore Stockpile and Slots Area	~~1.15~~ 1.17	0.00
Northern Existing Stockpile	~~1.64~~ 1.65	0.00
Southern Existing Stockpile	~~2.99~~ 2.88	0.00
TS-1 Topsoil Stockpile	~~0.31~~ 0.99	0.00
~~TS-2A Topsoil Stockpile~~	~~0.50~~	~~0.00~~
~~TS-2B Topsoil Stockpile~~	~~0.35~~	~~0.00~~
~~TS-3 Topsoil Stockpile~~	~~0.29~~	~~0.00~~
~~TS-4 Topsoil Stockpile~~	~~0.40~~	~~0.00~~
~~TS-5 Topsoil Stockpile~~	~~0.20~~	~~0.00~~
~~Stockpile Area Common Areas (f)~~	~~2.39~~	~~0.00~~
Subtotal	~~10.22~~ 6.62	**0.00**
Common Areas (e)		
Eastern Disturbed Area Common Areas	2.88	0.00
Western Disturbed Area Common Areas	3.66	0.00
Subtotal	6.44	0.00
TOTAL	~~51.80~~ 51.02	~~0.62~~ 0.73
GRAND TOTAL OF ALL DISTURBED AREAS	~~52.42~~ 51.75	

Notes:

(a) The surface acres of larger disturbances were planimetered from Figures 5 and 6. ~~The measured dimensions in feet, shown in parenthesis, were used to calculate the surface acres of the smaller disturbances.~~

(b) Spreadsheets used to create the values in this table utilized additional significant digits; however, for simplicity of presentation the numbers have been rounded.

(c) The existing county road and the existing BLM/State road that extends from the county road to the top of the mesa were not included as surface disturbance because these roads are pre-existing and will remain in place after the mine is closed and reclaimed.

(d) The WRA permanent diversion channel will remain intact as part of the reclaimed topography.

(e) The ~~building area~~ common areas include the areas around the buildings and stockpiles that do not have a specified use.

~~(f) The stockpile area common areas include the areas around the stockpiles that do not have a specified use.~~

TABLE 2
STRUCTURES AND FOUNDATIONS

Building/Structure Demolition								
Building/ Structure	Length (ft)	Width (ft)	As-Built Area (sqft)	Height (ft)	Volume (cf)	Building Leveling Cost ($/building	On-Site Disposal Unit Cost (a) ($/cy~~)~~	Estimated Cost (b) ($)
					~~36,000~~		$7.75	~~$10,080~~
Mine Office/Dry	~~60~~	~~40~~	11,628	15	174,420	$5,000	~~0.28~~	$21,688
~~Mine Office~~	~~40~~	~~24~~		~~15~~	~~14,400~~		~~$0.28~~	~~$4,032~~
					~~30,000~~		$7.75	~~$8,400~~
Shop/Warehouse	~~50~~	~~30~~	15,656	20	313,120	$5,000	~~0.28~~	$87,674
~~Warehouse~~	~~30~~	~~30~~		~~20~~	~~18,000~~		~~$0.28~~	~~$5,040~~
							$7.75	~~$235~~
Well House	14	6		10	840		~~0.28~~	$241
					~~1,680~~		$7.75	~~$470~~
Vent Hole Diffusers (~~ca~~)	5	6		~~56~~ 64	1,920		~~0.28~~	$551
					~~100,920~~			~~$27,787~~
				Subtotal	490,300			$57,440

~~Dump Charges~~			
~~Demolished Volume (b) (cf)~~	~~Weight (c) (tons)~~	~~Unit Cost ($/ton)~~	~~Estimated Cost ($)~~
~~33,640~~	~~187~~	~~$70~~	~~$13,082~~

Concrete Pads, Foundations, and Walls								
Building/ Structure	Length (ft)	Width (ft)	As-Built Area (sqft)	Pad Thickness (in)	Volume (cy)	Break Concrete Unit Cost ($/cy)	On-site Disposal Unit Cost ($/cy)	Estimated Cost (d) ($)
					~~29.6~~			~~$3,726~~
Mine Office/Dry	60	40	11,628	4	143.6	$118.00	$7.75	$18,052
~~Mine Office~~	~~40~~	~~24~~		4	~~11.9~~	~~$118.00~~	~~$7.75~~	~~$1,490~~
					~~27.8~~			~~$3,493~~
Shop/Warehouse	50	30	15,656	6	289.9	$118.00	$7.75	$36,458
~~Warehouse~~	~~30~~	~~30~~		~~6~~	~~16.7~~	~~$118.00~~	~~$7.75~~	~~$2,096~~
Well House	No Concrete Pad							$0
~~Ore Slots - Pad~~	~~40~~	~~25~~		~~12~~	~~37.0~~	~~$237.00~~	~~$7.75~~	~~$9,065~~
~~Ore Slots - Walls (e)~~	~~240~~	~~4~~		~~12~~	~~35.6~~	~~$237.00~~	~~$7.75~~	~~$8,702~~
					~~158.5~~			~~$28,572~~
				Subtotal	433.5			$54,510

~~Selective Demolition/ Torch Cutting (f)~~			
~~Building/ Structure~~	~~Estimated Length of Cuts (lf)~~	~~Unit Cost ($/lf)~~	~~Estimated Cost ($)~~
~~Ore Slots~~	~~612~~	~~$1.15~~	~~$704~~

Total Cost Estimate for Demolition and Disposal of Structures and Foundations: ~~$70,145~~ $111,950

Notes:

(~~a~~) ~~At each vent hole, a 4-foot high diffuser and approximately 4 feet of casing will be removed and disposed. The 8-foot height was multiplied by the number of vent holes (7) to calculate a total height of 56 feet. The diffusers and casing are typically 5 to 6 feet in diameter.~~

(~~ab~~) The volume of demolished materials was estimated to be 1/3 of the intact, in place volume of the building or structure.

(be) The estimated cost includes building leveling and on-site disposal costs.~~The weight of demolished materials was est~~

(c) At each vent hole, a 4-foot high diffuser and approximately 4 feet of casing will be removed and disposed. The 8-foot height was multiplied by the number of vent holes (8) to calculate a total height of 64 feet. The diffusers and casing are typically 5 to 6 feet in diameter.

(d) The estimated cost includes concrete break-up and on-site disposal costs.

(~~e~~) ~~The area and volume of concrete walls separating the ore slots was estimated based on four walls, 60 foot long, 4 foot high, and 12 inches thick.~~

(~~f~~) ~~The length of torch cutting required was estimated based on cutting three 60 foot long by 12 foot wide steel ore chutes into 10 foot by 12 foot sections with cuts required on all four sides of each section.~~

TABLE 3
INFRASTRUCTURE

Water Well	Quantity	Unit	Unit Cost	Estimated Cost
Pump (Removal)	1	ea	$1,625.00	$1,625
Grout Screen/Casing	500	lf	$15.02	$7,510
			Subtotal	**$9,135**

Septic System				
Pump out and Transportation	125	mi	$15.03	$1,879
Disposal	23	kgal	$1.90	$44
Manholes	2	ea	$194.00	$388
Tank - Mine Waste Fill (a)	23000	gal	$0.22	$5,023
Tank - Concrete Cap, material (a)	10	cy	$85.50	$855
			Subtotal	**$8,189**

Fencing Removal				
Septic System Fencing	~~530~~ 441	lf	$1.59	~~$843~~ $701
Evaporation Pond Fencing	4230	lf	$1.59	$6,726
Storage Yard Fencing	~~800~~ 363	lf	$3.05	~~$2,440~~ $1,107
			Subtotal	~~**$10,008**~~ **$8,534**

Oil/Fuel/Water Storage Tank and Sand Trap Removal				
1,000 gal Waste Oil Tank				
- Pump out	1000	gal	$0.46	$460
- Transport	125	mi	$1.78	$223
- Disposal	1000	gal	$3.29	$3,290
- State Taxes/Fees	1000	gal	$1.06	$1,060
5,000 gal diesel/gas/water tanks				
- Load onto Trailer (b)	3	ea	$158.30	$475
- Haul and Disposal (c)	3	ea	$690.00	$2,070
65 to 100-gal oil tanks and 500-gal diesel tank				
- Load onto Trailer (b)	5	ea	$79.15	$396
- Haul and Disposal (d)	5	ea	$138.00	$690
Remove Sand Trap	1	ea	$599.07	$599
			Subtotal	**$9,262**

Total Cost Estimate for Demolition of Infrastructure: ~~**$36,594**~~ **$35,120**

Notes:

(a) Septic tank to be filled with 23,000 gallons (114 cy) of fine-grained mine waste and capped with 10 cy of cement.

(b) Cost to prepare and load tanks onto trailers was estimated to be 2 hours per 5,000-gal. tank and 1 hour per 65 to 500-gal. tank and includes an equipment operator, 0.5 laborer, and front end loader (See RSMeans Crew B-10T).

(c) Unit cost is $690 per tank for hauling up 100 miles round-trip.

(d) The hauling costs for all four 65 to 100-gal. oil tanks and the 500 gal tank was estimated to be equivalent to one 5,000 gal. tank.

TABLE 4
MINE OPENINGS

Vent Holes	Number of Ventholes	Quantity	Unit	Unit Cost	Estimated Cost
Excavate around vent hole (8 bcy/vent) (a)	~~7~~ 8	~~1.0~~ 0.14	day	$1,326.80	~~$1,327~~ $1,493
~~Cut, weld, and pour concrete (b)~~					
~~- Welder~~	~~7~~	~~0.75~~	~~day~~	~~$789.45~~	~~$4,145~~
~~- Laborer~~	~~7~~	~~1.75~~	~~day~~	~~$341.20~~	~~$4,180~~
~~- Steel Plate (6' x 6') (c)~~					~~$0~~
~~- Steel I-Beam (22')~~	~~7~~	~~22.0~~	~~lf~~	~~$9.40~~	~~$1,448~~
~~- Rebar (d)~~	~~7~~	~~132.0~~	~~lf~~	~~$0.03~~	~~$28~~
~~- Concrete (6' x 6' x 6") (e)~~	~~7~~	~~30.0~~	~~bag~~	~~$9.10~~	~~$1,911~~
Backfill vents					
Load fill material into trucks (b, c)	**8**	**10.0**	**hour**	**$90.00**	**$7,200**
Haul and dump fill material near vent hole (d)	**8**	**30.0**	**hour**	**$85.00**	**$20,400**
Cleanup and removal cost	**8**	**4.0**	**hour**	**$85.00**	**$2,720**
Backfill over cover (36 sf x 6' D + 28 sf x 4' D)	~~7~~ 8	12.2	cy	$0.99	~~$85~~ $97
				Subtotal	~~$13,122~~ $31,909

Portals	Number of Portals	Quantity	Unit	Unit Cost	Estimated Cost
Backfill (e)	5	225.0	cy	$4.82	$5,423
				Subtotal	**$5,423**

Total Cost Estimate for Plugging of Mine Openings: ~~$18,544~~ $37,332

Notes:

(a) Assume that a hydraulic excavator can excavate around a vent hole in 45 minutes and tram to next vent hole (ave. 3/4-mile) in 15 minutes. Allow 1 hour for initial tramming from main site to first vent hole.

~~(b) Disposal costs for the vent casings and diffusers are included in Table 2, Structures and Foundations.~~

~~(c) Steel plate will be salvaged from Ore Slots.~~

~~(d) Rebar caluculated based on 6-inch spacing.~~

~~(e) Concrete calculated based on 0.6 cf/bag.~~

(b) Material volume based on 700-foot deep circular vent hole of 6-foot diameter.

(c) Loading duration based on 15 cubic feet per ton of material, 22 tons per load, and 10 minutes to load each truck.

(d) Hauling duration based on 30 minutes to transfer material from loading area to vent hole.

(e) Volume of backfill required for portal openings calculated based on the opening size of 8' high x 12' wide x 30' deep and a cover extending 2 ' above and coming out and to the sides at a 3H:1V slope to create a natural appearing talus slope. The volume of the backfill inside the mine opening is 8' x 12' x 30' = 2880 cf or approximately 107 cy. The volume of the backfill directly in front of the opening is 1/2 x 10' x 20' x 12' = 1200 cf or approximately 44 cy. The volume of backfill to either side of the opening is 1/2 x 1/2 x 10 x 20 x 20 = 1,000 cf or approximately 37 cy. The total volume of fill is 107 + 44 + (2 x 37) = 225 cy.

TABLE 5
GENERAL EARTHWORK

Bulk Grading/ Excavation	Volume (a) (bcy)	Unit Cost ($/bcy)	Estimated Cost ($)
Waste Rock Area - to 4:1 slopes (a)			
65' dozer push, -25% grade	18,306	$0.91	$16,658
Evaporation Pond Breach - to 2.5:1 slopes (a)			
Dam - 160' dozer push, -40% grade	4,000	$2.75	$11,000
Dam - 180' dozer push, level grade	6,000	$4.63	$27,780
Dam - 450' scraper haul	2,000	$4.03	$8,060
Overflow/Dike - 50' push	295	$1.88	$554
Evaporation Pond Sediment			
Removal - 3,000' scraper haul	15,700	$3.99	$62,643
Push into Ventholes - 50' push	15,700	$1.17	$18,369
Load into Mine Trucks (d)	14,700	$0.50	$7,350
Haul in Mine Workings - ¼ mile RT (d)	14,700	$3.62	$53,214
		Subtotal	**$205,628**

Grading and Ripping	Area (b,c) (ac)	Rough Grade and Scarification Unit Cost ($/ac)	Estimated Cost ($)
Evaporation Pond and Dam (excluding breach slopes)	21.3	$978.00	$20,871
Evaporation Pond East Road	0.3	$978.00	$280
Evaporation Pond South Road	1.3	$978.00	$1,274
Waste Rock Area - Final Configuration	9.0	$978.00	$8,794
Main Portal Access Road	0.3	$978.00	$321
Vent Hole and Adit Pads	~~0.7~~ 0.8	$978.00	~~$701~~ $802
Vent Hole and Adit Roads	1.5	$978.00	~~$1,498~~ $1,505
Storage Yards	~~2.9~~ 0.3	$978.00	~~$2,801~~ $293
Stockpile Areas	~~10.2~~ 6.6	$978.00	~~$10,000~~ $6,472
Parking, Buildings, Leach Field Area	~~0.8~~ 1.4	$978.00	~~$804~~ $1,347
Temporary Drainages	~~0.6~~ 0.7	$978.00	~~$539~~ $660
Common Areas~~ at South Portal~~	~~2.8~~ 6.9	$978.00	~~$2,696~~ $6,297
Total	~~51.7~~ 50.0	**Subtotal**	~~$50,579~~ $48,916

TABLE 5 (continued)
GENERAL EARTHWORK

Topsoil Placement	Area (b,c,d)	Depth	Volume	Unit Cost	Estimated Cost
Dozer	(ac)	(inches)	(bcy)	($/bcy)	($)
Main Portal Access Road	0.3	6	265	$0.50	$132
Storage Yards	~~2.9~~ 0.3	6	~~2310~~ 242	$0.50	~~$1,155~~ $121
Stockpile Areas	~~10.2~~ 6.6	6	~~8,248~~ 5,338	$0.50	~~$4,124~~ $2,669
Parking, Buildings, Leach Field Area	~~0.8~~ 1.4	6	~~663~~ 1,111	$0.50	~~$331~~ $556
Temporary Drainages	~~0.6~~ 0.7	6	444 544	$0.50	~~$222~~ $272
Common Areas at South Portal	~~2.8~~ 6.4	6	~~2,224~~ 5,194	$0.50	~~$1,112~~ $2,597
Scraper					
Waste Rock Area - Final Configuration	9.0	6	7,254	$3.49	$25,315
Main Portal Area	0.7	6	581	$3.49	$2,029
Totals	~~27.3~~ 25.4		~~21,989~~ 20,529	**Subtotal**	~~$34,421~~ $33,691

Grading and Pocking	Estimated Time Required	Grading and Pocking Cost	Estimated Cost
	(day)	($/day)	($)
Grade Waterline Corridor	4.0	$1,326.80	$5,307
Pock Breach Slopes in Dam	1.5	$1,326.80	$1,990
Pock Backfilled Portals	0.5	$1,326.80	$663
		Subtotal	**$7,961**

Riprap	Estimated Time Required	Unit Cost	Estimated Cost
	(hr)	($/hr)	($)
Push from upstream Dam Face, 300-hp Dozer	4.0	$241.31	$965
Placement into Breach, Loader, 2.5 to 3 cy bucket	8.0	$185.90	$1,487
		Subtotal	**$2,452**

Sediment Control	Estimated Required Length	Volume	Unit Cost	Estimated Cost
	(lf)	(cy)	($/lf)	($)
Earthen Berm, 2 feet high, Loader, 0.3 cy/lf	1000	300	$0.50	$150
			Subtotal	**$150**

Total Cost Estimate for General Earthwork (e): ~~$301,191~~ $298,798

Notes:

(a) See Appendix B for cut and fill volume and push length calculations for the Waste Rock Area and the Evaporation Pond Dam.

(b) Spreadsheets used to create the values in this table utilized additional significant digits; however, for simplicity of presentation the numbers have been rounded.

(c) The surface areas were planimetered from Figures 5 and 6. The areas of the WRA and Stockpile Area Common Areas were adjusted for

(d) Top soil placement is not required on the secondary roads and pads because the topsoil was not removed.

(e) 1,000 CY of sediment will remain in venthole shafts.

TABLE 6
REVEGETATION

Area to be revegetated	Grade	Seed Mix (a)	Area (b,c)	Seed Unit Cost	Application Unit Cost (de)	Estimated Cost
			(ac)	($/ac)	($/ac)	($)
Evaporation Pond Breach, 2H:1V slope	Steep	4	0.9	$327	$682.40	$908
Evaporation Pond and Dam, 3H:1V slope or flatter	Gentle	4	21.3	$327	$200.00	$11,225
Evaporation Pond East Road	Gentle	4	0.3	$327	$200.00	$151
Evaporation Pond South Road	Gentle	3	1.3	$420	$200.00	$808
Sealed Portals (5), 2H:1V slopes	Steep	1	0.1	$332	$682.40	$101
Waste Rock Area, 3H:1V slope and flatter (ed)	Gentle	1	9.0	$332	$200.00	$4,788
Main Portal Area	Gentle	1	0.7	$332	$200.00	$383
Main Portal Access Road	Gentle	1	0.3	$332	$200.00	$175
Vent Hole Pads and Roads (VH-5, 6, 7, & 8, & 9)	Gentle	2	~~1.0~~ 1.1	$297	$200.00	~~$497~~ $547
Vent Hole Pads and Roads (VH-1, 3, & 4)	Gentle	3	0.6	$420	$200.00	$372
Adit Pads	Gentle	3	0.1	$420	$200.00	$58
Adit Roads	Gentle	3	0.5	$420	$200.00	$305
Storage Yards	Gentle	1	~~2.9~~ 0.3	$332	$200.00	~~$1,524~~ $159
Stockpile Areas (Ore and Topsoil)	Gentle	1	~~3.2~~ 2.2	$332	$200.00	~~$1,705~~ $1,145
Existing Stockpile Areas (ed)	Gentle	3	~~4.6~~ 4.5	$420	$200.00	~~$2,871~~ $2,769
Parking, Buildings, Leach Field Area	Gentle	1	~~0.8~~ 0.3	$332	$200.00	~~$437~~ $159
Temporary Drainages	Gentle	1	~~0.6~~ 1.4	$332	$200.00	~~$293~~ $733
Common Areas ~~below the WRA~~	Gentle	1	~~2.8~~ 6.4	$332	$200.00	~~$1,467~~ $3,425
		Total	**50.9** 51.3		**Subtotal**	~~$28,066~~ $28,212

Total Cost Estimate for Revegetation: ~~$28,066~~ $28,212

Seed Mixes

No.	Name	Unit Cost
1	**Greasewood Seed Mix**	**$332 / acre**
2	**Salt Desert Shrub Seed Mix**	**$297 / acre**
3	**Blackbrush Seed Mix**	**$420 / acre**
4	**Evaporation Pond Seed Mix**	**$327 / acre**

Notes:

(a) Four unique seed mixes will be applied to different areas of the mine site in accordance with the revegetation plan.

(b) The surface areas were planimetered from Figures 5 and 6. The areas of the WRA and Stockpile Area Common Areas were adjusted for final reclaimed configuration. The area of the permanent WRA diversion channel was not included since it will not be reclaimed. The area of the evaporation pond south road was included since it will be reclaimed, but was not a new disturbance (i.e. it is a pre-existing road). The waterline corridor was not included because it will not be seeded.

(c) **Spreadsheets used to create the values in this table utilized additional significant digits; however, for simplicity of presentation the numbers have been rounded.**

(de) Gentle slopes of 3H:1V or flatter will be seeded with a dozer equipped with rippers and a broadcast seeder. Steep slopes of 2H:1V will be broadcast seeded and raked by hand.

(ed) Micorrhizal fungi will be applied to the WRA and the existing ore stockpiles in accordance with the revegetation plan.

TABLE 7
MOBILIZATION/DEMOBILIZATION

Mobilization/Demobilization	Number of Units	First 25 Miles Unit Cost (a)	Additional Mileage Cost (a,b)	Estimated Cost (c)
Heavy Equipment	(each)	($)	($)	($)
300 HP Dozer	1	$305	$610	$1,830
80 HP Dozer	1	$210	$420	$1,260
15 CY Self-propelled scraper	2	$370	$740	$4,440
80 HP Hydraulic Excavator (3/4 cy/36-inch bucket)	1	$210	$420	$1,260
125 HP Wheel Front End Loader (2.5 CY Bucket)	1	$210	$420	$1,260
			Subtotal	**$10,050**

Mobilization/Demobilization	Number of Units	Travel time (one-way)	Unit Cost	Estimated Cost (e)
Trucks (d)	(each)	(hr)	($/hr)	($)
12-cy Dump Truck, 16-ton	2	3	$108.83	$1,306
Truck Mounted Gas Welding Machine	1	3	$87.77	$527
Drill rig	1	3	$141.05	$846
Pick-up Truck, 4WD, 3/4-ton	2	3	$53.87	$646
			Subtotal	**$3,325**

Total Cost Estimate for Mobilization/Demobilization of Equipment: $13,375

Notes:

(a) Unit costs are for mobilization or demobilization (one or the other).

(b) The cost for haul distances greater than 25 miles is 10% of the first 25 miles unit cost for every 5 miles over 25 miles. The average haul distance to the site was calculated to be 125 miles, one way. (125 miles-25 miles/5 miles) x 10% = 200%

(c) The estimated cost includes both mobilization and demobilization for the first 25 miles and additional mileage.

(d) Mobilization and Demobilization costs for the trucks are estimated based on three hours of the crew and vehicle cost.

(e) The estimated cost includes both mobilization and demobilization.

TABLE 8
SUPERVISION, CONSTRUCTION FACILITIES, AND MONITORING

Description	Number of Units	Quantity (a)	Unit Cost	Estimated Cost
Supervision and Construction Facilities (b)	(ea)	(wk)	($)	($)
Field Superintendent	1	4	$2,225	$8,900
Truck	2	4	$143	$1,140
Generator, Gas-engine, 10 kW	1	4	$75	$300
Portable Toilets	2	4	$41	$324
Fuel for trucks (c)	2	4	$90	$720
Fuel for generator (d)	1	4	$140	$562
			Subtotal	**$11,946**

Description	Number of Units	Quantity (e)	Unit Cost	Estimated Cost
Monitoring	(day)	(ea)	($)	($)
Semi-Annual On-Site Review	1	6	$445	$2,670
Annual Report Preparation	5	3	$445	$6,675
			Subtotal	**$9,345**

Total Cost Estimate for Supervision, Construction Facilities, and Monitoring: $21,291

Notes:

(a) The estimated time for reclamation of the site is four weeks of construction activities and three years of monitoring.

(b) Existing facilities will be used for temporary field office and equipment laydown.

(c) Fuel usage for the trucks was based on 90 miles of usage per day, 5 days a week, 15 mpg, and $3.00 per gallon.

(d) Fuel usage for the generator was based on 8 hours per day, 5 days a week, 1.17 gal/hr, and $3.00 per gallon.

(e) The estimated time of reclamation monitoring is three years. On-site reviews will be conducted semi-annually and reports will be prepared annually.

TABLE 9
COST ESTIMATE SUMMARY

Item	Cost Estimate
STRUCTURES AND FOUNDATIONS	~~$70,145~~ $111,950
INFRASTRUCTURE	~~$36,594~~ $35,120
MINE OPENINGS	~~$18,544~~ $37,322
GENERAL EARTHWORK	~~$301,191~~ $298,724
REVEGETATION	~~$28,066~~ $28,212
MOBILIZATION/DEMOBILIZATION	$13,375
SUPERVISION, CONSTRUCTION FACILITIES, AND MONITORING	$21,291
CONTINGENCY (10%)	~~$48,921~~ $54,608
ESCALATION, 5 YEARS (a)	~~$91,790~~ $102,461
GRAND TOTAL FOR SITE RECLAMATION:	~~**$629,917**~~ **$703,146**

Notes:

(a) Based on an inflation rate of 3.2%

APPENDIX A
MEANS COST DATA

Listed unit costs are from the primary reference except where noted otherwise.

Primary Reference:

- 2006 RSMeans Heavy Construction Cost Data, 20th Annual Edition, Kingston, MA.

Secondary References:

- 2005 RSMeans Environmental Remediation Cost Data – Unit Price and Assemblies, 11th Annual Edition, Azimuth Group, Ltd. and ECHOS, LLC.
- 2006 RSMeans Site Work and Landscape Cost Data, 25th Annual Edition, Kingston, MA.
- Caterpillar Performance Handbook, Ed. 29 by Caterpillar Inc., Peoria, IL, 1998.
- Seed and Inoculation Quotes from Granite Seed Company in Lehi, Utah and Maple Leaf Company in Ephraim, Utah.

Part I: Structures and Foundations

A. **Building Leveling charges: $5,000 per building,**
Quote from: Kirk, Jackson, Jackson Excavation
(435-691-8927)
Quote Provided 5-16-20086/3/08
Add for disposal, on site
= Crew B-11A, 232 cy/day, $7.75/cy
~~Section 02220 110 Building Demolition (pg. 25)~~
~~0500: Small bldgs., or single bldgs. no salvage included, steel Crew B3, 14,800 cf/day, $0.28/cf~~
~~(includes 20 miles haul, dump fees not included)~~

~~B. Section 02220 330 Selective Demolition, Dump Charges (pg. 28)~~
~~0100: Building Construction Materials~~
~~= $70/ton~~

B~~C~~. Section 03055 110 Selective Concrete Demolition (pg. 136)
0060: Break up into small pieces, Average reinforcing
= Crew B-9, 16 cy/day, $118/cy
~~0070: Break up into small pieces, Maximum reinforcing~~
~~= Crew B-9, 8 cy/day, $237/cy~~

C~~D~~. Section 02220 130 Bldg. Footings and Foundations Demolition (pg. 25)
4200: Add for disposal, on site
= Crew B-11A, 232 cy/day, $7.75/cy

~~E. Section 02220 370 Selective Demolition, Torch Cutting (pg. 29)~~
~~0020: Steel, 1" thick plate~~
~~= Crew 1 Clab, 360 lf/day, $1.15/lf~~

Part II: Infrastructure

A. Section 02220 386 Selective Demolition, Water Wells (pg. 32)
0500: Up to 500' well, 30 HP pump
= Crew Q-22, 1 well/day, $1,625/ea.

B. 2005 RSMeans Environmental Remediation Cost Data – Assemblies
Section 33 23 1173 8" Well, Portland Cement Grout (pg. 3-166)
Capital Costs = $14.44/LF. Adjusted to $15.02 with 4% inflation increase for one year.

C. 2005 RSMeans Environmental Remediation Cost Data – Unit Price
Section 33 19 0208 Haul 6,000 Gallons Wastewater, Includes Loading and Unloading (pg. 9-174)
132781261: Transport Load/Unload 6,000 Gallons of Wastewater
= $15.03/mile, Adjusted to $3.29/gal with 4% inflation increase for one year

D. 2005 RSMeans Environmental Remediation Cost Data – Unit Price
Section 33 19 7102 Wastewater Disposal Fee (pg. 9-198)
027781000: Treatment of Wastewater at POTW
= $1.90/kgal, Adjusted to $1.98/kgal with 4% inflation increase for one year

E. Section 02220 240, Minor Site Demolition (pg. 26)
0015: No hauling, abandon catch basin or manhole
= Crew B-6, 7 manholes/day, $194/ea.

F. 2005 RSMeans Environmental Remediation Cost Data – Unit Price
Section 33 10 9501 Fill Tank/Vault with Sand (pg. 9-92)
020846101: Fill Tank/Vault with Sand, not including material
= Crew COETL, 1,936 gal/hr, $0.21/gal
Adjusted to $0.22/gal with 4% inflation increase for one year

G. Section 03310 200 Concrete, Field Mix (pg 156)
0010: FOB forms 2250 psi = $85.50/cy

H. Section 02220 220 Fencing Demolition (pg. 25)
1600: Fencing, barbed wire, 3 strand
= Crew 2 Clab, 430 lf/day, $1.59/lf
1700: Chain link, posts & fabric, remove only, 8' to 10' high
= Crew B-6, 445 lf/day, $3.05/lf

I. 2005 RSMeans Environmental Remediation Cost Data – Unit Price
Section 33 10 0205 Pump 501-3,000 Gallon Liquid from Tank (pg. 9-90)
020837413: Loading Tank Contents, 501-3,000 Gallons
= Crew XTRHC, 187.5 gal/hr, $0.44/gal
Adjusted to $0.46/gal with 4% inflation increase for one year

J. 2005 RSMeans Environmental Remediation Cost Data – Unit Price
Section 33 19 0207 Transport Bulk Liquid/Sludge Hazardous Waste, Maximum 5,000 Gallons (per mile) (pg. 9-174)
020837304: Transport 5,000 Galllon Bulk Sludge/Liquid Hazardous Waste
= $1.71/mile, Adjusted to $1.78/mile with 4% inflation increase for one year

K. 2005 RSMeans Environmental Remediation Cost Data – Unit Price
Section 33 19 7303 Disposal of Hazardous Liquid Bulk Waste (pg. 9-206)
132781224: Hazardous Liquid Bulk Waste Requiring Stabilization
= $3.16/gal, Adjusted to $3.29/gal with 4% inflation increase for one year

L. 2005 RSMeans Environmental Remediation Cost Data – Unit Price
Section 33 19 0325 State HTW Disposal Tax/Fee (Bulk Liquid) (pg. 9-183)
132785102: State HTW Disposal Tax/Fee (Bulk Liquid)
= $1.02/gal, Adjusted to $1.06/gal with 4% inflation increase for one year

M. Miscellaneous Costs (pg. 412)
1 Equipment operator, 0.5 Laborer and 1 Front End Loader, Wheel mounted, 2.5 cy bucket (See Crew B-10T) = $79.15/hr

N. Section 02115 200 Storage Tank Removal (pg. 22)
1020: Haul tank to certified salvage dump, 100 miles round trip
1023: 3,000 to 5,000-gal tank = $690/ea.

O. 2005 RSMeans Environmental Remediation Cost Data – Unit Price
Section 16 01 9037 Remove Oil Interceptor to 100 GPM (pg. 3-23)
021119282: Remove Oil Interceptor to 100 GPM
= $576.03/ea, Adjusted to $599.07/gal with 4% inflation increase for one year

Part III: Mine Openings

A. Section 02315 610 Excavating, trench (pg. 58)
0110 ¾ cy hydraulic backhoe
300 bcy/day, $4.42/bcy
Crew B-12F, 1 equip operator, 1 laborer, 1 excavator = 1,326.80/day

~~B. Section 05090 900 Welding Structural (pg 190)~~
~~0020: Field welding, 1/8" E6011, cost per welder, no oper. engr.~~
~~= Crew E-14, 8 hours/day, $92/hr or $736/day~~
~~Add 1 Cutting Torch, $17.80/day (see Crew E-25, pg. 430)~~
~~Add 0.5 Gases, $35.65/day (see Crew E-25, pg. 430)~~
~~Total = $789.45/day~~

~~C. Miscellaneous Costs (pg. 408)~~
~~1 Laborer, $341.20/day (see Crew A-2)~~

~~D. Section 05120 640 Structural Steel Members (pg. 193)~~
~~0100: W 6 x 9 (matl. only)~~
~~= $9.40/lf~~

~~E. Section 03210 500 Reinforcing Steel, A615 (pg. 152)~~
~~2550: #4 rebar, $77/ton or $0.03/lf~~

~~F. Section 03060 200 Cement Material Only (pg. 137)~~
~~0240: Portland, Type I/II, TL Lots, 94 lb bags = $9.10/bag~~

BG. Section 02315 120 Backfill Structural, Dozer or Front End Loader (pg. 48)
2020: 80 HP, 50' haul, Common Earth, 1100 lcy/day
= Crew B-10L, 1,100 lcy/day, $0.99/lcy

CH. Section 02315 432 Excavating, Bulk, Dozer (pg. 54)
2220: 80 HP, 150' haul, Common earth
= Crew B-10L, 200 bcy/day, $4.82/bcy

Part IV: General Earthwork

A. Section 02315 432 Excavating, Bulk, Dozer (pg. 54)
5020: 300 HP, 50' haul common earth
= Crew B-10M, 1,650 bcy/day, $1.17/bcy
5220: 300 HP, 150' haul common earth
= Crew B-10M, 800 bcy/day, $2.42/bcy
By interpolation, estimated costs vs. distance for the waste rock area is:
65 ft haul = $1.36/bcy.
Reduce price by 33% for -25% Grade = $1.36/bcy x 0.67 = $0.91/bcy
5040: 300 HP, 50' haul clay
= Crew B-10M, 1,025 bcy/day, $1.88/bcy
5240: 300 HP, 150' haul clay
= Crew B-10M, 500 bcy/day, $3.86/bcy
5440: 300 HP, 300' haul clay
= Crew B-10M, 250 bcy/day, $7.70/bcy
By interpolation, estimated costs vs. distance for the evaporation pond dam is:
160 ft = $4.10/bcy.
Reduce price by 33% for -25% Grade = $4.10/bcy x 0.67 = $2.73/bcy.
180 ft = $4.63/bcy

B. Section 02315 452 Excavation, Bulk, Scrapers (pg. 56)
1350: Self-propelled scraper, 14 cy, ¼ push dozer, common earth
3000' haul = $3.99/bcy.
1500: Self-propelled scraper, 14 cy, ¼ push dozer, clay
1500' haul = $5.60/bcy.
Reduce price by 28% for 450' average haul versus 1,500 feet in Means
Adjusted price = $5.60/bcy x 0.72 = $4.03/bcy.

C. Section 02315 210 Borrow, Loading and/or Spreading (pg. 50)
7070: Topsoil or loam from stockpile, Front end loader, 3 cy bucket
= Crew B-10T, 1,575 bcy/day, $23.50/bcy
Labor + Equipment = $0.45/bcy + 10% (O&P) = $0.50/bcy

D. Section 02315 490 Hauling, excavated or borrow, loose cubic yards (pg. 57)
0310: 12 CY Dump Truck, ¼ mile round trip, 3.7 loads/hr.
= Crew B-34B, 288 lcy/day, $3.02/lcy
Adjust for bcy (swell factor = 1.2) = 240 bcy/day, $3.62/bcy

E. Section 02910 710 Lawn Bed Preparation (pg. 121)
2610: Rough grade & scarify subsoil to receive topsoil, Common earth, 200 HP dozer with scarifier
= Crew B-11A, 80 msf/day or 1.8 ac/day, $22.50/msf or $978/ac

F. Section 02315 452 Excavation, Bulk, Scrapers (pg. 56)
1300: Self-propelled scraper, 14 cy, ¼ push dozer, common earth
1500' haul = $3.49/bcy.

G. Crew B-12F (pg. 413), ¾ cy hydraulic excavator for soil pocking
1 equip operator, 1 laborer, 1 hydraulic excavator = $1,326.80/day (includes O&M)

H. Crew B-10M (pg. 412), 300 hp dozer for pushing rock
1 equip. operator, 0.5 laborer, 1 dozer = $1,930.50/day (includes O&M)

I. Crew B-10P (pg. 412), 2.5 cy front end loader
1 equip. operator, 0.5 laborer, 1 loader = $1,487.20/day (includes O&M)

Part V: Seeding

A. Quote from: Lloyd Stevens, Maple Leaf Company
Ephraim, Utah (800-671-5323)
Quote Provided 11-2-2006

Greasewood Seed Mix: $332/acre
Salt Desert Shrub Seed Mix: $329/acre
Blackbrush Seed Mix: $420/acre
Evaporation Pond Seed Mix: $343/acre

B. Quote from: Bill Agnew, Granite Seed Company
Lehi, Utah (801-768-4422)
Quote Provided 10-31-2006

Greasewood Seed Mix: $378/acre
Salt Desert Shrub Seed Mix: $297/acre
Blackbrush Seed Mix: $462/acre
Evaporation Pond Seed Mix: $327/acre
Mycorrhizal fungi, $5.50/lb (application rate = 60 lb/acre)

Note: Lowest quotes are used in the cost estimate.

C. 2006 RSMeans Site Work and Landscape Cost Data
Section 02910 710 Lawn Bed Preparation (pg. 130)
3200: Scarify soil, Large commercial, 135 HP Grader w/ scarifier
= Crew B-11L, 280 msf/day or 6.4 ac/day, $4.60/msf or $200/ac

D. Miscellaneous Costs (pg. 408)
Broadcast Seeding and Raking by Hand
2 Laborers, $682.40/day (see Crew A-2), 1.0 ac/day, or $682.40/ac

Part VI: Mobilization/Demobilization

A. Section 02305 250 Mobilization or Demob, (one or the other, unless noted), Up to 25 mile haul distance (50 mile RT for mob/demob crew) (pg. 47-48)
0020: Dozer, loader, backhoe, excavator, grader, paver, roller, 70 to 150 HP
= Crew B-34N, 4 mobs/day, $210/ea
0100: Dozer, loader, backhoe, excavator, grader, paver, roller, above 150 HP
= Crew B-34K, 3 mobs/day, $305/ea
0600: Self-propelled scraper, 15 cy = Crew B-34K, $370/ea.
2500: For each additional 5 miles add 10%
Add 10% for each 5 miles of additional haul distance over 25 miles
Assume 125-mile average commute, measured as the average distance to Ticaboo, UT from Hanksville, Blanding, Price, Moab and Green River, UT
(125 miles-25 miles)/5 miles x 10% = 200%

B. Trucks (includes drivers, assume 3-hr drive for average one-way commute of 125 miles)
a. 12 cy Dump truck, 16-ton = $108.83/hr (See Crew B-34B, pg. 418)
b. Truck-mounted gas welding machine, $87.77/hr (See Crew E-14, pg. 430)
c. Drill Rig = $141.05/hr (See Crew B-23, pg. 416)
d. Pickup truck, 4wd, 3/4 –ton = $53.87/hr (See Crew A-3A, pg. 408)

Part VII: Supervision, ~~and~~ Construction Facilities, and Monitoring

A. Section 01310 700 Field Personnel (pg. 8)
0240: Superintendent, minimum
= $2,225/wk = $445/day

B. Section 01 54 33 Rental Equipment (pg. 404)
7200: Truck, pickup, ¾ ton, 4 wheel drive
= $570/mo = $142.50/wk

C. Section 01 54 33 Rental Equipment (pg. 402)
2300: Generator, electric, gas engine, 10 kW
= $300/mo. = $75/wk

D. Section 01 54 33 Rental Equipment (pg. 404)
6410: Toilet, portable chemical
= $162/mo. = $40.50/wk

APPENDIX B
VOLUME AND AVERAGE PUSH DISTANCE CALCULATIONS

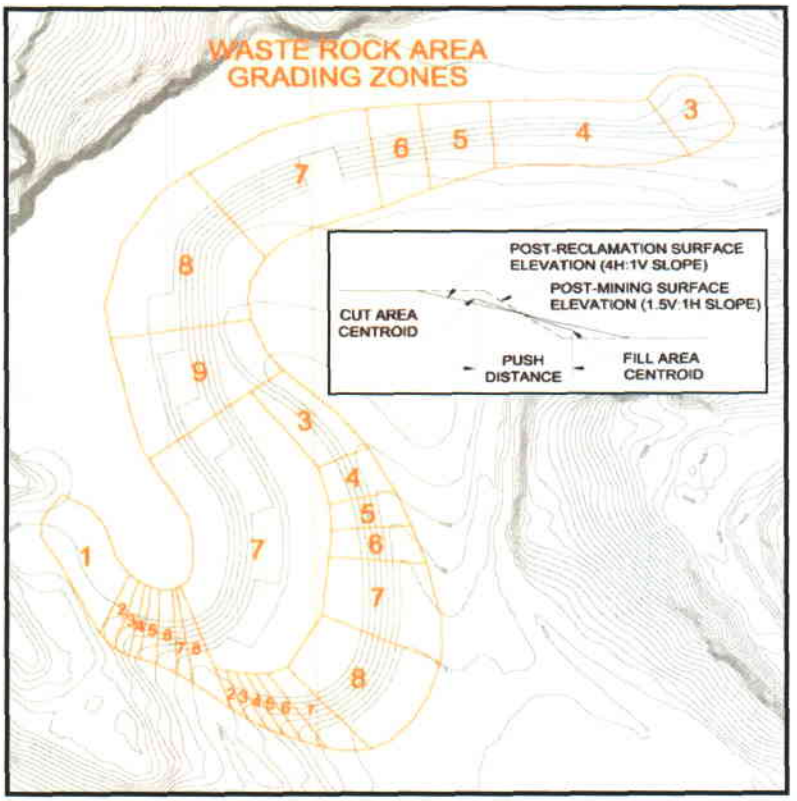
WASTE ROCK AREA

Elevation Change (# of 5' contours)	1	2	3	4	5	6	7	8	9
Elevation Change (ft)	5	10	15	20	25	30	35	40	45
Push Distance (ft)	9.2	18.3	27.5	36.7	45.8	55.0	64.2	73.3	82.5
Average length of cut section (ft)	108	24	174	262	135	131	461	278	109
Volume of Section (cy)	31	28	453	1211	979	1367	6534	5148	2556

Volume Weighted Average Push Distance (ft): **65**

Total Volume of Cut/Fill (cy): **18,306**

The Waste Rock Area was divided into grading zones based on the change in elevation (see figure on right). The numbers inside each grading zone indicate the number of 5 foot contour lines contained in that zone. The push distance was calculated as the horizontal distance from the centroid of the cut zone to the centroid of the fill zone. The push distance for grading the 1.5:1 slope (during mining) to a 4:1 slope (after reclamation) is 9.167 feet for every 5 vertical feet of elevation change. The approximate volumes of each grading zone were estimated based on the cut/fill cross-section area and the average width of the grading zone. The volumes were verified with an AutoCAD calculation based on final and reclaimed contours. A volume weighted average push distance was calculated from the push distances and approximate volumes of each grading zone.



APPENDIX B (continued)
VOLUME AND AVERAGE PUSH DISTANCE CALCULATIONS

EVAPORATION POND DAM

Total Volume of Dam Cut/Fill (cy): 12,000 (Based on AutoCAD calculations[a])

Dozer Push, -25% Grade

Volume to pushed from dam notch to upper bench of dam, -25% grade =	4,000	cy
Average push distance from breach to bench, -25% grade =	**160**	**ft**

Dozer Push, Level Grade

Volume to pushed from notch to upper bench of dam, level ground =	4,000	cy
Average push distance from breach to upper bench =	165	ft
Volume to pushed from notch to evaporation pond, level ground, 300 ft push max =	2,000	cy
Average push distance from breach to evaporation pond =	210	ft
Volume weighted average dozer push distance, level ground =	**180**	**ft**

Scraper Haul, Level Grade

Volume to pushed from dam notch to bench, downhill =	2,000	cy
Average push distance from breach to bench =	**450**	**ft**

Notes

a The contours of the reconstructed dam were drawn, based on dam design and the reclaimed contours were assumed to be the same as the existing contours. Surfaces were created based on both sets of contours and AutoCAD was used to calculate the cut and fill volume. The calculated cut and fill volume was 11,920 cubic yards.